IPS-800/1600-D20 Series

Internet Power Switches

Models:

IPS-800-D20
IPS-800E-D20
IPS-1600-D20
IPS-1600E-D20

User's Guide

western™
telematic inc.

Warnings and Cautions:
INSTALLATION INSTRUCTIONS

SECURE RACKING

If Secure Racked units are installed in a closed or multi-unit rack assembly, they may require further evaluation by Certification Agencies. The following items must be considered.

1. The ambient within the rack may be greater than room ambient. Installation should be such that the amount of air flow required for safe operation is not compromised. The maximum temperature for the equipment in this environment is 45°C. Consideration should be given to the maximum rated ambient.

2. Installation should be such that a hazardous stability condition is not achieved due to uneven loading.

INPUT SUPPLY

Check nameplate ratings to assure there is no overloading of supply circuits that could have an effect on overcurrent protection and supply wiring.

GROUNDING

Reliable earthing of this equipment must be maintained. Particular attention should be given to supply connections when connecting to power strips, rather than direct connections to the branch circuit.

No Serviceable Parts Inside; Authorized Service Personnel Only

Do not attempt to repair or service this device yourself. Internal components must be serviced by authorized personnel only.

• **Shock Hazard - Do Not Enter**

Disconnect Power

If any of the following events are noted, immediately disconnect the unit from the outlet and contact qualified service personnel:

1. If the power cord becomes frayed or damaged.

2. If liquid has been spilled into the device or if the device has been exposed to rain or water.

Two Power Supply Cables

Note that this unit features two separate power circuits, which require a power supply cable for each circuit. Before attempting to service or remove this unit, please make certain that both power cables are disconnected.

FCC Part 15 Regulation

This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to Part 15 of the FCC rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses, and can radiate radio frequency energy, and if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Plug the equipment into an outlet on a circuit that is different from the one used by the receiver.
- Consult the dealer or an experienced radio/TV technician for help.

This device complies with Part 15 of the FCC rules. Operation of this device is subject to the following conditions: (1) This device may not cause harmful interference, and (2) this device must accept any interference that may cause undesired operation.

> **WARNING:** **Changes or modifications to this unit not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment**

Industry Canada - EMI Information

This Class A digital apparatus complies with Canadian ICES-003.

Cet appareil numérique de la classe A est conforme à la norme NMB-003 du Canada.

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1. Introduction

Electronic equipment sometimes "locks-up," requiring a service call just to flip the power switch to perform a simple reboot. The IPS-800/1600-D20 Series Internet Power Switches give you the ability to perform this function from anywhere, just point your browser to the IPS's IP address, enter the secure password, and you're just a click away from remote power On, Off or Reboot!

20 Amp Power Control

The IPS-800/1600-D20 Series Internet Power Switch provides plenty of power for rack mount applications; two separate 20 Amp power circuits provide a total of 40 Amps per IPS unit.

Intelligent Power Control

In addition to web browser access, the IPS can also communicate over any TCP/IP network using standard Telnet, or out-of-band using an external modem and basic VT100 type terminal emulation.

Security Features and Co-Location Features

To ensure security, web browser access requires the user to enter an assigned user name and password. The IPS provides two levels of operational passwords; the System Administrator Level, which allows access to all configuration and switching functions, and the User Level, which only allows access to assigned plugs and cannot be used to change unit configuration.

In addition to password security features, the IPS also includes an address specific IP security mask, which can be employed to prevent unauthorized network access to the IPS command mode.

Easy to Configure, Easy to Use

The IPS can be configured over the network, via modem, or locally via the IPS COM port. Easy to use commands let you assign a location name, set system parameters and view plug status. Outlets can be switched On, Off, or booted using plug numbers or names.

Reliability and Support

The IPS is built in the USA and backed by a two year warranty. NetReach products are installed in thousands of network sites world wide. Our customers know they can depend on WTI for superior quality and reliability for their most mission-critical operations.

IPS-800-D20, IPS-800E-D20, IPS-1600-D20 and IPS-1600E-D20 Units

This User's Guide discusses the IPS-800-D20, IPS-800E-D20, IPS-1600-D20 and IPS-1600E-D20 Internet Power Switches. Throughout this User's Guide, all four units are referred to as the "IPS". The input voltages, maximum loads and the number of output plugs per unit are summarized in the table below. All other features function identically except where noted.

Model Number	Total Outlets	Input Voltage	Max. Load per Outlet	Max. Load per Bus	Max. Load per Unit
IPS-800-D20	8	100 to 120 VAC	15 Amps	20 Amps	40 Amps
IPS-800E-D20	8	100 to 240 VAC	15 Amps	20 Amps	40 Amps
IPS-1600-D20	16	100 to 120 VAC	15 Amps	20 Amps	40 Amps
IPS-1600E-D20	16	100 to 240 VAC	15 Amps	20 Amps	40 Amps

Typographic Conventions

Throughout this manual, typefaces and characters have been used to denote the following:

COURIER FONT Indicates characters typed on the keyboard. For example, **/ON 3** or **/OFF 4**.

[Bold Font] Text set in bold face and enclosed in square brackets indicates a specific key. For example, **[Enter]** or **[Esc]**.

2. Unit Description

As shown in Figure 2.1 and Figure 2.2, the IPS back panel includes connectors, LEDs and manual controls described below:
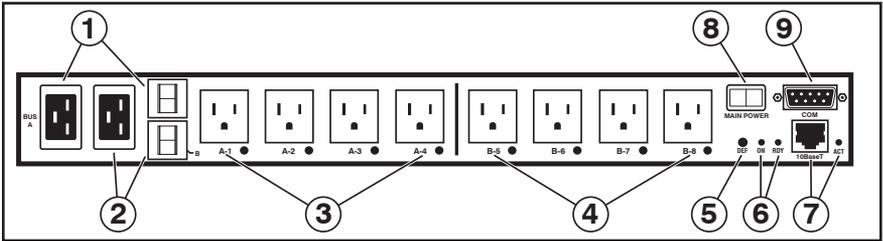
Figure 2.1: IPS-800-D20 Back Panel (120 VAC Model Shown)
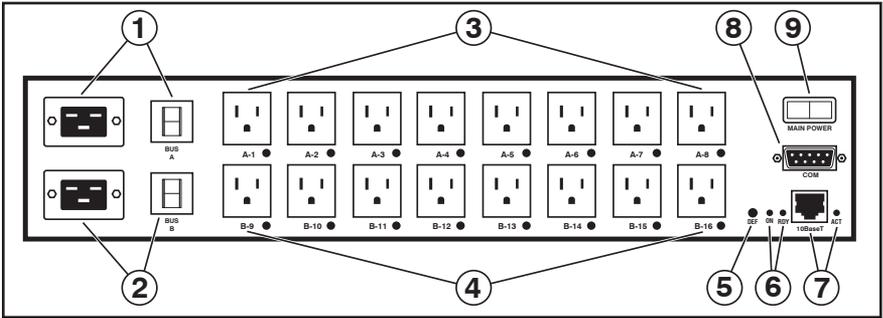
Figure 2.2: IPS-1600-D20 Back Panel (120 VAC Model Shown)

① **Bus "A" Power Inlet and Circuit Breaker:** An IEC320-C20 AC inlet and circuit breaker which supply power to the Circuit "A" outlets. Also includes cable keeper (not shown.)

 • **Models IPS-800-D20 & IPS-1600-D20:** Power Inlet and 20 Amp Circuit Breaker.

 • **Models IPS-800E-D20 & IPS-1600E-D20:** Power Inlet and 20 Amp Circuit Breaker.

② **Bus "B" Power Inlet and Circuit Breaker:** An IEC320-C20 AC inlet and circuit breaker which supply power to the Circuit "B" outlets. Also includes cable keeper (not shown.) Includes the same components listed in Item 1 above.

③ **Bus "A" Switched Outlets and Indicator Lights:** AC Outlets that can be switched On, Off or rebooted in response to user commands.

- **IPS-800-D20:** Four (4) NEMA 5-15R Outlets with indicator lights. 20 Amps total load per circuit; 15 Amps load per outlet.

- **IPS-800E-D20:** Four (4) IEC320-C13 Outlets with indicators. 20 Amps total load per circuit; 15 Amps load per outlet.

- **IPS-1600-D20:** Eight (8) NEMA 5-15R Outlets with indicators. 20 Amps total load per circuit; 15 Amps load per outlet.

- **IPC-1600E-D20:** Eight (8) IEC320-C13 Outlets with indicators. 20 Amps total load per circuit; 15 Amps load per outlet.

④ **Bus "B" Switched Plugs and Plug Indicators:** AC Outlets that can be switched On, Off or rebooted in response to user commands. Includes same components listed in item 3 above.

⑤ **Default Button:** This button can be used to either reset the unit to default parameters or manually toggle all plugs On or Off:

- **Default Parameters:** With the Main Power switch set in the Off position, press and hold the Default Button, then set the Main Power switch in the On position and release the Default Button. All menu defined parameters will be reset to default values.

- **Manual Plug Toggle:** Press the Default Button and hold it down for three seconds. All IPS power outlets will be toggled On or Off.

Note: If desired, the Default Button's manual plug control capabilities can also be disabled as described in Section 5.3.1.

⑥ **Unit Status Indicators:** Two LED Indicators which function as follows:

- **ON:** Lights when power is applied to the IPS Unit.

- **RDY:** Flashes continuously when the IPS is ready to recieve commands.

⑦ **Network Port and Activity Indicator:** An RJ45 Ethernet Port for connection to your TCP/IP network. The default IP Address is 192.168.168.168, for more information, please refer to Section 5.3.4. The Activity Indicator flashes to indicate activity at the Network Port.

⑧ **Main Power Switch:** Applies power to the IPS Unit. This switch must be "On" in order for the IPS to function. Note that this switch is not used to set the On/Off status of the switched outlets.

⑨ **COM / RS232 Port:** A DB9, RS232 serial port (DTE), for connection to a local terminal or external modem, as described in Section 4.3.

3. Quick Start

This Quick Start Guide describes a simplified installation procedure for the IPS-800-D20, IPS-800E-D20, IPS-1600-D20 or IPS-1600E-D20 hardware, which will allow you to communicate with the unit in order to demonstrate basic features and check for proper operation.

Note that this Quick Start Guide does not provide a detailed description of unit configuration or discuss advanced operating features. For more information, please refer to the Installation, Configuration and Operation sections in this User's Guide.

3.1. Hardware Installation

3.1.1. Apply Power to the IPS

Refer to power rating nameplate on the IPS back panel, and then connect the unit to an appropriate power source. Note that the IPS features two separate AC inputs and two separate power busses; connect the power cables (supplied with the unit) to the unit's Circuit "A" and Circuit "B" Power Inlets, install the cable keepers, then connect the cables to an appropriate power source. Refer to the table below for information concerning power requirements and maximum loads.

Model Number	Total Outlets	Input Voltage	Max. Load per Outlet	Max. Load per Bus	Max. Load per Unit
IPS-800-D20	8	100 to 120 VAC	15 Amps	20 Amps	40 Amps
IPS-800E-D20	8	100 to 240 VAC	15 Amps	20 Amps	40 Amps
IPS-1600-D20	16	100 to 120 VAC	15 Amps	20 Amps	40 Amps
IPS-1600E-D20	16	100 to 240 VAC	15 Amps	20 Amps	40 Amps

Set the Main Power Switch in the ON position; the ON LED should light, and the RDY LED should begin to flash.

3.1.2. Connect your PC to the IPS

The IPS can either be controlled by a local PC, that communicates with the unit via cable, controlled via external modem, or controlled via TCP/IP network. In order to switch plugs or select parameters, commands are issued to the IPS via either the Network Port or Console Port. Note that it is not necessary to connect to both the Network and Console Ports, and that the Console Port can be connected to either a local PC or External Modem.

• **Network Port:** Connect your 10Base-T or 100Base-T network interface to the IPS Network port.

• **Console Port:** Use the supplied null modem cable to connect your PC COM port to the IPS COM (RS232) Port.

• **External Modem:** Use a standard AT to Modem cable to connect your external modem to the IPS COM (RS232) Port.

Note that when the IPS is shipped from the factory, RS232 Port Parameters are set as follows: 9600 bps, 8 Data Bits, One Stop Bit, No Parity. Although the IPS allows these parameters to be easily redefined, for the purpose of this Quick Start procedure, it is recommended that you configure your communications program to accept these default parameters.

3.2 Communicating with the IPS

The IPS offers two separate user interfaces: the Web Browser Interface and the Text Interface. The Web Browser interface allows you to contact the IPS via a TCP/IP network, using a standard, JavaScript enabled web browser (such as Internet Explorer.) The Text Interface consists of a series of ASCII text menus, which may be accessed via TCP/IP network, Local PC or modem.

Note: The IPS features a default IP Address (192.168.168.168) and a default Subnet Mask (255.255.255.0). This allows initial network access without first setting up the unit's network parameters (providing that you are contacting the IPS from a node on the same subnet.) When attempting to access the IPS from a node that is not on the same subnet, please refer to the User's Guide for further configuration instructions.

1. **Access the Command Mode:** This procedure differs slightly, depending on whether you're contacting the IPS via the Web Browser Interface or Text Interface.

   a) **Web Browser Interface:** Start your JavaScript enabled Web Browser. Enter the IPS's default IP address (192.168.168.168) in your browser address bar and then press **[Enter]**. A password prompt will be displayed. Since at this point, the user name and password have not yet been defined, you can simply click OK without keying in a user name or password. The Plug Status Screen will be displayed as shown in Figure 3.1.
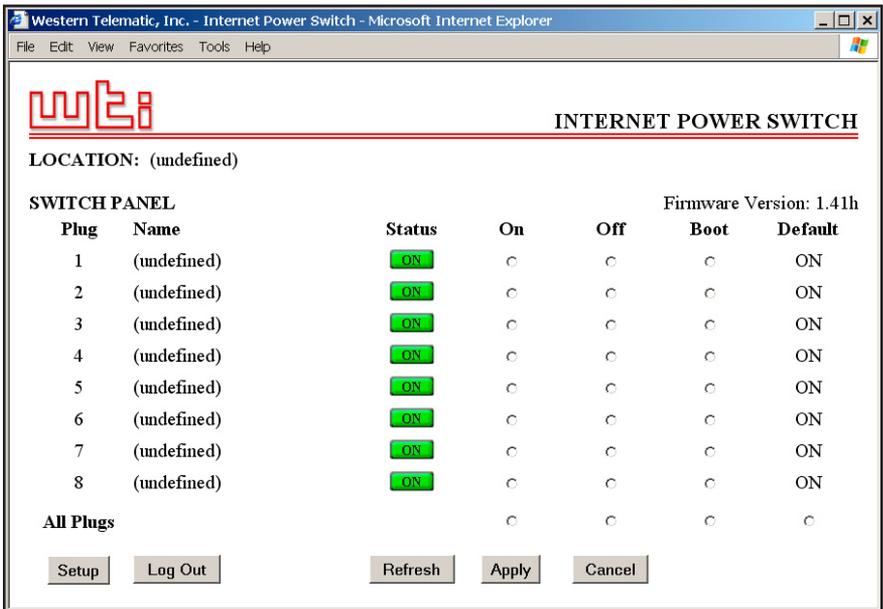
Figure 3.1: Plug Status Screen - Web Browser Interface (Model IPS-800-D20 Shown)
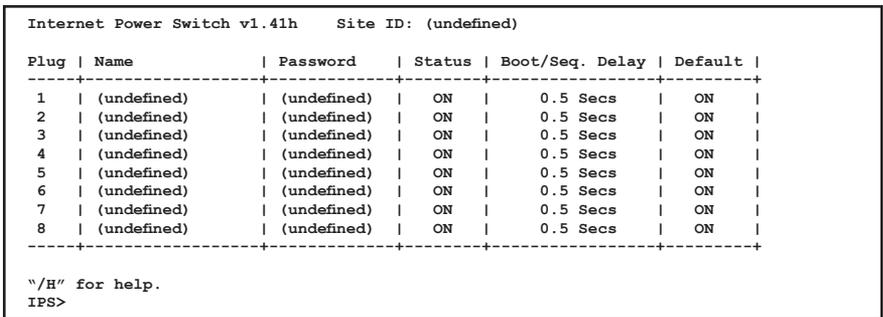
Figure 3.2: Plug Status Screen - Text Interface (Model IPS-800-D20 Shown)

b)   **Text Interface:**

   i.   **Via Telnet:** Telnet to the IPS's default IP address (192.168.168.168). The Plug Status Screen (Figure 3.2) should be displayed.

   ii. **Via Local PC:** Start your communications program (e.g., Hyperterminal) and then press **[Enter]**. The Plug Status Screen should be displayed as shown in Figure 3.2. The default communications parameters for the Console Port are 9600 bps, No Parity, 8 data bits, One stop bit.

      iii. **Via Modem:** Use your communications program to dial the number for the phone line which is connected to your external modem. The Plug Status Screen should be displayed as shown in Figure 3.2. Note that in order to communicate with the unit via modem, you must first access the command mode via Network or Local PC, and use the Serial Parameters Menu to set the Port Mode to "Modem."

2. **Test Switching Functions:** You may wish to perform the following tests in order to make certain that the IPS is responding to commands.

    a) **Reboot Outlet:** If you are communicating with the unit via the Web Browser Interface, select the button in the "Boot" column for Plug 1, and then click on "Apply." If you are operating the unit via the Text interface, type **/BOOT 1** and press **[Enter]**. The status indicator for Plug 1 should go off, pause for a moment, and then go back on, indicating that the boot cycle has been successfully completed.

    b) **Switch Outlet Off:** From the Web Browser Interface, select the button in the "Off" column for Plug 1, and then click "Apply." From the Text Interface, type **/OFF 1** and press **[Enter]**. The status indicator for Plug 1 should go Off, indicating that the command has been successfully completed. Leave Plug 1 in the "Off" state, and then proceed to the next step.

    c) **Switch Outlet On:** From the Web Browser Interface, select the button in the "On" column for Plug 1, and then click "Apply." From the Text Interface, type **/ON 1** and press **[Enter]**. The status indicator for Plug 1 should then go back On, indicating that the command has been successfully completed.

3. **Log Out:** When you have finished communicating with the unit it is important to always log off by issuing the appropriate IPS command, rather than simply closing your Telnet or communications program. When you log off using the proper IPS command, this ensures that the unit has completely exited from command mode, and is not waiting for the inactivity timeout to elapse before allowing additional connections.

    a) **Web Browser Interface:** Click on the "Log Out" button.

    b) **Text Interface:** Type **/X** and press **[Enter]**.

This completes the Quick Start Guide for the IPS. Prior to placing the unit into operation, it is recommended to refer to the remainder of this User's Guide for important information regarding advanced configuration capabilities and more detailed operation instructions. If you have further questions regarding the IPS unit, please contact WTI Customer Support as described in Appendix C.

4.   Installation

This Section provides further details regarding installation of the IPS unit.

4.1. Power Supply Connection

Connect the IPS unit to an appropriate power supply. Note that the IPS's Main Power switch must be "On" in order for the unit to operate.

⚠️ CAUTIONS: ⚡

- **Before attempting to install this unit, please review the warnings and cautions listed at the front of the user's guide.**

- **This device should only be operated with the type of power source indicated on the instrument nameplate. If you are not sure of the type of power service available, please contact your local power company.**

- **Reliable earthing (grounding) of this unit must be maintained. Particular attention should be given to supply connections when connecting to power strips, rather than directly to the branch circuit.**

4.1.1.   Installing the Cable Keepers

The IPS includes cable keepers, which are designed to prevent the power supply cables from being accidentally disconnected from the unit.

- **IPS-1600-D20 and IPS-1600E-D20:** Sixteen-plug units include pre-installed cable keepers. When attaching the power supply cables to the unit, first swing the cable keepers out of the way, then plug the power cables securely into the power inputs. When the cables are in place, snap the cable keepers over each plug to secure the cables to the unit.

- **IPS-800-D20 and IPS-800E-D20:** The cable keeper for eight-plug units must be installed by the user.

    1.   First make certain that *both* of the IPS's two power cables are disconnected from the power source.

    2.   Use the screws supplied with the cable keeper kit to attach the bottom plate to the underside of the IPS-800 unit as shown in Figure 4.1. When properly attached, the bottom plate will protrude about one inch beyond the edge of the IPS-800 unit.

    3.   Use the screws supplied with the cable keeper kit to loosely attach the slider plate to the bottom plate as shown in Figure 4.1. Make certain that the slider plate moves freely, ensuring that it can be easily moved into position once the power cables are in place.
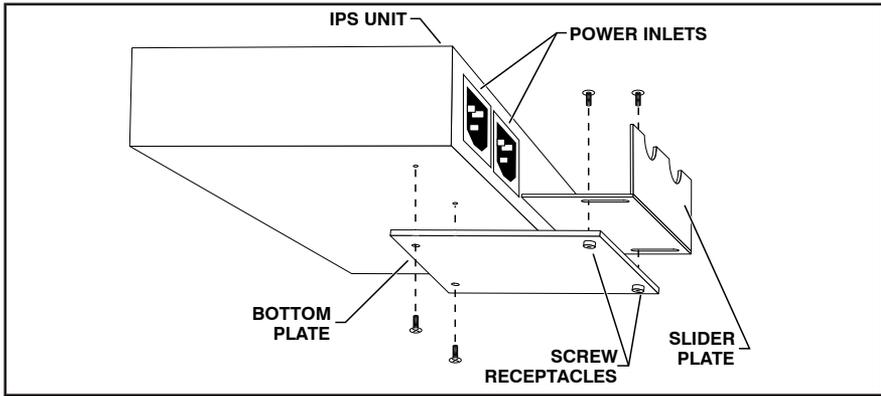
Figure 4.1: IPS-800 Series Cable Keeper Installation

4. Connect the power cables to the power inlets. Check to make sure that both cables are firmly seated in the power inlet connectors.

5. Align the power cables with the two notches in the top of the slider plate, and then move the slider plate forward until both cables are held firmly in place.

6. Tighten the two screws that secure the slider plate to the bottom plate. Check to make certain that the cables are held firmly in place by the cable keepers.

4.2. Connection to Switched Outlets

Connect the power cord from your switched device to one of the AC Outlets on the IPS unit. Note that when power is applied to the IPS, the AC Outlets will be switched "ON" by default.

• **IPS-800-D20 and IPS-1600-D20 (120 VAC Models):** Units include two separate power busses. Each bus can support a total of 20 Amps. Each AC Outlet can support up to 15 Amps.

• **IPS-800E-D20 and IPS-1600E-D20 (230 VAC Models):** Units include two separate power busses. Each bus can support a total of 20 Amps. Each AC Outlet can support up to 15 Amps.

4.3. Serial COM / RS232 Port Connection

The COM Port is a male, RS232C DB9 connector, wired in a DTE configuration. In the default state, the COM port is configured for 9600 bps, no parity, 8 data bits, 1 stop bit. The COM Port can be connected to either an external modem or a local PC, but not both items at the same time. Appendix A describes the COM Port interface.

4.3.1.   Connecting a Local PC

Use the supplied null modem cable to connect your PC COM port to the IPS COM (RS232 Port.) Make certain that the Serial Port Mode is set to "Console" as described in Section 5.3.1.

4.3.2.   Connecting an External Modem

When connecting directly to an external modem, use a standard AT to Modem cable. Make certain that the modem is initialized at the same default parameters as the IPS COM Port.   Make certain that the IPS Serial Port Mode is set to "Modem" as described in Section 5.3.1.

4.4. Connecting the Network Cable

The Network Port is an RJ45 Ethernet jack, for connection to a TCP/IP network. Connect your 10Base-T cable to the Network Port. Note that the IPS includes a default IP address (192.168.168.168) and a default subnet mask (255.255.255.0.) When installing the IPS in a working network environment, it is recommended to define network parameters as described in Section 5.3.4.

> **Note:** The IPS features a 10Base-T Interface. When connecting to a 100Base-T interface, most router switches will autosense to determine if the device is 100Base-T or 10Base-T, and then configure the network interface accordingly. If your router switch does not autosense, the network interface port must be manually set to 10Base-T.

This completes the IPS installation instructions. Please proceed to the next Section for instructions regarding unit configuration.

5. Configuration

5.1. System Mode and User Mode

In order to restrict access to sensitive command functions, the IPS features two operating modes; System Mode and User Mode.

- **System Mode:** Allows access to all configuration menus, switching functions and status screens. The System Mode Status Screens show On/Off conditions for all switched outlets, and lists all currently defined system parameters.

- **User Mode:** Allows access to switching and reboot commands, but does not allow access to configuration functions. Users may only issue commands to, or view status of the plugs that are specifically allowed by their password.

The IPS will display a password prompt when the unit is contacted via the COM Port or Network Port. The password entered at this prompt determines whether the unit will start-up in System Mode or User Mode. If the System Password is entered, the System Mode will be active. If a Plug Password is entered, the User Mode will be active. The System Password is defined via the General Parameters menu (Section 5.3.1), and the Plug Passwords are defined via the Plug Parameters Menus (Section 5.3.3.)

Notes:

- If you wish to restrict access to configuration menus, you must define the System Password.

- If the System Password is not defined, the IPS will always start-up in System Mode, allowing unprotected access to configuration and switching functions.

- If the System Password is not defined, the Password Prompt will not be displayed when you access the IPS via the Text Interface. The prompt will always be displayed when the IPS is contacted via the Web Browser Interface.

- When the IPS is contacted via Network, the password prompt will also include a field for the user name. If you have not defined a user name, then you may leave this field blank, and only the password is required to gain access to the unit. The user name prompt is not displayed when the unit is contacted via the Text Interface.
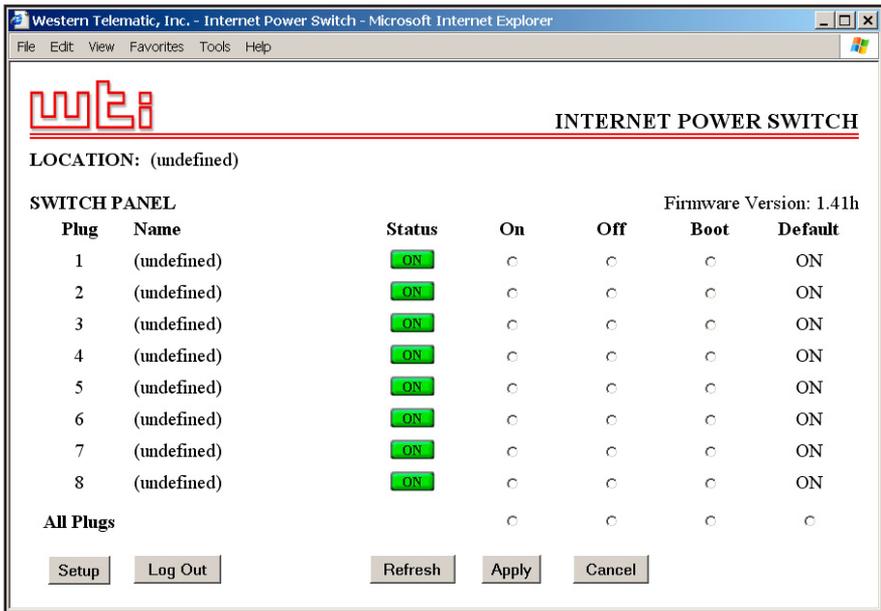
Figure 5.1: Plug Status Screen - Web Browser Interface (IPS-800-D20 Shown)

5.2. Communicating with the IPS

In order to configure the unit or invoke command functions, you must first connect to the IPS and access command mode. As discussed in Section 3, the IPS offers two separate command interfaces: the Web Browser Interface, and the Text Interface.

The IPS also offers three different methods for accessing command mode; via network, via external modem, or via local PC. The Web Browser Interface is only available when the IPS is contacted via network, and the Text Interface is available via network, modem or local PC. The sections that follow describe the procedure for accessing the Web Browser Interface or the Text Interface.

Note: Configuration functions are only available when you have logged into the IPS command mode using the System Password.

5.2.1. Accessing the Web Browser Interface

In order to use the Web Browser Interface, the IPS must be connected to a TCP/IP network, and your PC must be equipped with a JavaScript enabled web browser (such as Internet Explorer or Netscape® Navigator.)

1. Start your JavaScript enabled Web Browser.

2. Key the IPS's IP address (default = http://192.168.168.168) into the web browser's address bar, and then press **[Enter]**.

3. **Password Prompt:** The IPS will display a prompt, which asks for your name and password.

    a) **User Name:** If you have not previously defined a user name, then this field should be left blank. A user name is only required when one has been defined via the General Parameters menu.

    b) **Password:** Key in your System Password or Plug Password and then click "OK" (Note that Plug Passwords do not permit access to configuration functions.)

    c) If the System Password has *not* been defined, simply click the "OK" button without keying in a name or password.

If a valid password is entered, the Plug Status Screen will appear.

5.2.2. Accessing the Text Interface

The Text Interface can be accessed via Network, modem or local PC. In order to access the Text Interface, your installation must include the following:

• **Access Via Network:** The IPS must be connected to your TCP/IP Network, and your PC must include a communications program (such as Hyperterminal™.)

• **Access Via Modem:** An external modem must be connected to the IPS RS232 COM Port, and a phone line must be connected to the external modem. Your PC Must include a communications program.

• **Access Via Local PC:** Your local PC must be connected to the IPS RS232 COM Port. The local PC must include a communications program.

To access command mode via the Text Interface, proceed as follows:

1. The IPS is transparent to parity and will accept 7 or 8 bit characters, but will always answer back at 8 bits, no parity. Make certain your communication program is set for the appropriate baud rate, bits, parity and Communications Port.

    a) **Via Modem:** Start your communications program. Dial the external modem connected to the IPS. Wait for the Connect message, then proceed to Step 2.

    b) **Via Local PC:** Start your communications program and press **[Enter]**. Wait for the connect message, then proceed to Step 2.

```
Internet Power Switch v1.41h    Site ID: (undefined)

Plug | Name              | Password    | Status | Boot/Seq. Delay | Default |
-----+-------------------+-------------+--------+-----------------+---------+
  1  | (undefined)       | (undefined) |   ON   |     0.5 Secs    |   ON    |
  2  | (undefined)       | (undefined) |   ON   |     0.5 Secs    |   ON    |
  3  | (undefined)       | (undefined) |   ON   |     0.5 Secs    |   ON    |
  4  | (undefined)       | (undefined) |   ON   |     0.5 Secs    |   ON    |
  5  | (undefined)       | (undefined) |   ON   |     0.5 Secs    |   ON    |
  6  | (undefined)       | (undefined) |   ON   |     0.5 Secs    |   ON    |
  7  | (undefined)       | (undefined) |   ON   |     0.5 Secs    |   ON    |
  8  | (undefined)       | (undefined) |   ON   |     0.5 Secs    |   ON    |
-----+-------------------+-------------+--------+-----------------+---------+


"/H" for help.
IPS>
```

Figure 5.2: Plug Status Screen - Text Interface (IPS-800-D20 Shown)

    c)   **Via Network:** The IPS includes a default IP address (192.168.168.168), which allows you to contact the unit from any network node on the same subnet. When the IPS is installed in a working network environment, it is recommended to redefine the IP Address, Subnet Mask, and Gateway Address as described in Section 5.3.3.

        i.   Telnet to the IPS's IP address. For example, if the IP address is "192.168.168.168", then on a UNIX system, the Telnet command would be:

            $ telnet 192.168.168.168 [Enter]

        ii.   If the Telnet connection is refused, this may mean that either the IP Security feature has denied the connection (See Section 5.3.4.1), or that the unit is operating on a 100Base-T network that does not autosense for 10Base-T devices (see Section 4.4.)

2.   **Password:** If the System Password has been defined, the unit will display the Password Prompt. Key in either the System Password or Plug Password, and press **[Enter]**. If the System Password has *not* been defined, the prompt will not be displayed when the unit is accessed via the Text Interface. Note that the Password feature is case sensitive.

3.   If a valid System Password or Plug Password is entered, the IPS will display the Plug Status Screen shown in Figure 5.2, followed by the "IPS>" Command Prompt.

    Note: The Plug Status Screen will not display actual passwords. Instead, the password column will read either "defined" or "undefined."

5.3. Configuration Menus

As described in the sections that follow, configuration parameters for the IPS can be selected via the Web Browser Interface or Text Interface. Although the Web Browser and Text Interface provide two separate means for selecting parameters, both interfaces allow access to essentially the same set of parameters, and parameters selected via one interface will also be applied to the other.

Web Browser Interface: Click the "Setup" button to gain access to the configuration menus; a row of buttons will be displayed along the left hand edge of the screen. Click the appropriate button to access the desired menu. Note the following:

- Newly selected parameters will not be activated until you click the "Apply" button.

- Click "Switch Panel" to return to the main status screen.

Text Interface: Refer to the Help Screen (/H), then enter the appropriate command to access the desired menu. When the configuration menu appears, key in the number or letter for the parameter that you wish to define and follow the instructions in the resulting submenu. Note the following:

- To exit from a parameters menu, press the **[Esc]** key.

The following sections describe options and parameters that can be accessed via each of the configuration menus. Please note that essentially the same selection of parameters and options are available via both the Web Browser Interface and Text Interface.

> **Note:** Configuration menus are only available when the System Mode is active. Configuration menus are not available if you have logged in using a Plug Password.
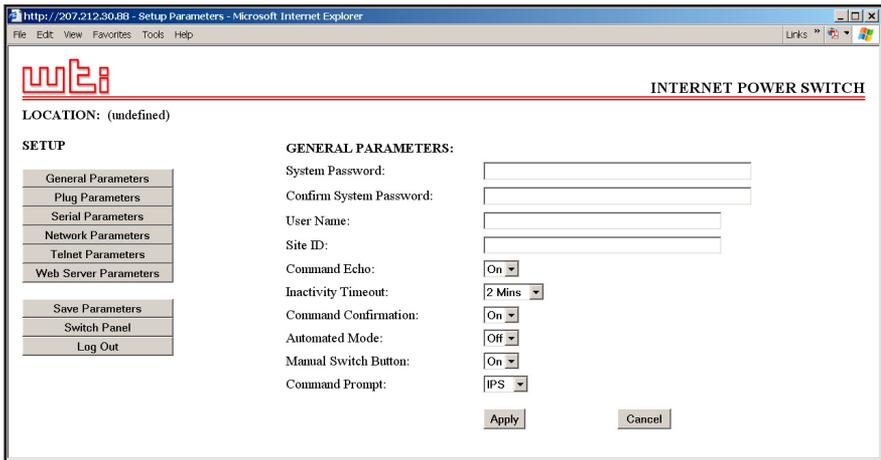
Figure 5.3: General Parameters Menu - Web Browser Interface

5.3.1.   The General Parameters Menus

The General Parameters Menus allow you to select parameters such as the System Password, User Name, Site I.D. and other options.

- **Web Browser Interface:** Click the "Setup" button to access the Setup Menus, and then click the "General Parameters" button. The General Parameters Menu will be displayed as shown in Figure 5.3.

- **Text Interface:** Type **/G** and press **[Enter]**. The General Parameters Menu will be displayed as shown in Figure 5.4.

The General Parameters Menus allow you to define the following parameters:

- **System Password:** The IPS will display a password prompt when you attempt to access command mode. When the System Password is entered at log on, the System Mode will be active, allowing access to both switching functions and configuration menus. (Four to 16 Characters, Default = undefined.)

Notes:

- If the System Password is *not* defined, then the IPS will always start up in System Mode, and configuration functions will then be available to anyone who accesses command mode.

- The System Password cannot begin with a forward slash (**/**) or backslash (****) character.

- The System Password cannot include non printable characters, space characters, asterisks (*****) or quotation marks.

```
GENERAL PARAMETERS:

1.   System Password:      (undefined)
2.   User Name:            (undefined)
3.   Site ID:              (undefined)
4.   Command Echo:         On
5.   Inactivity Timeout:   2 Mins
6.   Command Confirmation: On
7.   Automated Mode:       Off
8.   Manual Switch Button: On
9.   Command Prompt:       IPS

A.   Default Parameters



Enter Selection,
Press <ESC> to Exit ...
```

Figure 5.4: General Parameters Menu - Text Interface

- **User Name:** (Optional) The User Name allows you to set up an additional layer of security for web access to command mode by requiring that users correctly enter a name in addition to a password. Note that the User Name is only required when the unit is accessed via the Web Browser Interface. (Four to 16 Characters, Default = undefined.)

Notes:
- If a User Name is defined, then users who login with a Plug Password (User Mode) will also need to enter this same User Name at the login prompt when attempting to access command mode via the Web Browser Interface.

- The User Name cannot begin with a forward slash (**/**) or backslash (****) character.

- The User Name cannot include non printable characters, space characters, asterisks (*****) or quotation marks.

- **Site ID:** Defines a brief text message, which can describe the location of the IPS unit. (Up to 32 characters, Default = undefined.)

Notes:
- The Site ID Message cannot begin with a forward slash (**/**) or backslash (****) character.

- The Site ID Message cannot include non printable characters or quotation marks.

- **Command Echo:** When enabled, ASCII commands sent via the Text Interface will be echoed back, allowing keystrokes to be displayed. This feature applies only to the Text Interface, and has no visible effect on the Web Browser Interface. (Default = On.)

- **Inactivity Timeout:** Determines how long the IPS will wait for additional commands during periods of inactivity. When the Timeout Period elapses, the user will be disconnected from the IPS command mode. (Default = 2 Minutes.)

- **Command Confirmation:** When enabled, the IPS will display a confirmation prompt before executing certain commands. When disabled, the prompt will be suppressed and commands will be executed immediately. (Default = On/Enabled.)

- **Automated Mode:** When enabled, the IPS will execute switching, reboot and exit commands without displaying a confirmation prompt, status screen or confirmation messages. For more information, please refer to Section 6.4. (Default = Off.)

    Note: When this option is enabled, security functions are suppressed, and users are able to access configuration menus and control plugs without entering a password. If security is a concern and the Automated Mode is required, it is recommended to use the IP Security feature (Section 5.3.4.1) to restrict access.

- **Manual Switch Button:** Enables and configures the Default Button's manual plug control function, but does not effect the Default Button's ability to reset parameters to default values. (Default = "On".)

    - **Off:** Disables the manual plug control function.

    - **On:** Enables manual plug control. When Default is pressed and held for three seconds, all outlets will be toggled On or Off.

- **Command Prompt:** Allows the Text Interface command prompt to be set to either "IPS", "NPS", or "NBB." (Default = IPS.)

- **Default Parameters:** Resets the IPS to default parameters. All menu selected parameters, including port names and passwords, will be cleared. This only is only available via the Text Interface.

    Note: If this function is invoked via the Network Port, the IP address will *not* be reset until you break your connection to the Network Port. If this function is invoked via the Console Port, the IP Address will be reset immediately.
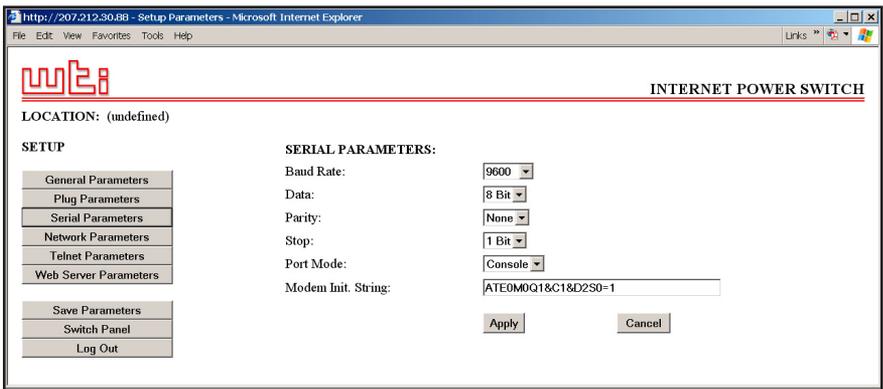
Figure 5.5: Serial Parameters Menu - Web Browser Interface

```
SERIAL PARAMETERS:

1. Baud Rate:        9600
2. Data:             8 Bit
3. Parity:           None
4. Stop:             1 Bit
5. Port Mode:        Console
6. Modem Init. Str: ATE0M0Q1&C1&D2S0=1


Enter selection,
Press <ESC> to return to previous menu ...
```
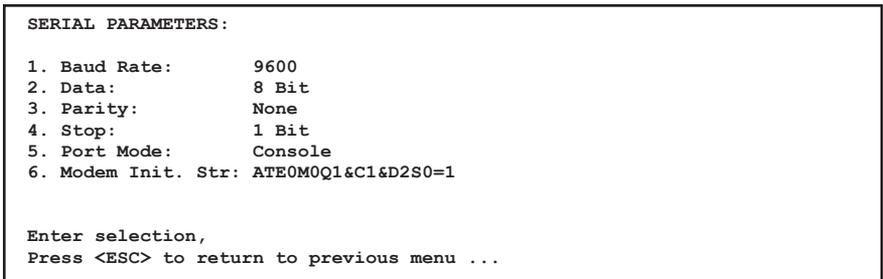
Figure 5.6: Serial Parameters Menu - Text Interface

5.3.2. The Serial Parameters Menu

The Serial Parameters Menus are used to configure the IPS's serial COM Port, and allow you to select parameters such as the Baud Rate, Parity and Modem Initialization String. To access the Serial Parameters Menu, proceed as follows:

- **Web Browser Interface:** Click the "Setup" button to access the Setup Menus, and then click the "Serial Parameters" button. The Serial Parameters Menu will be displayed as shown in Figure 5.5.

- **Text Interface:** Type **/C** and press **[Enter]**. The Serial Parameters Menu will be displayed as shown in Figure 5.6.

As shown in Figure 5.5 and Figure 5.6, the Serial Parameters Menus allow you to define the following parameters:

- **Baud Rate:** Baud Rate for the IPS COM Port. (Default = 9600 bps.)

    Note: When this setting is changed, the new baud rate will not be applied until the user exits and then re-enters command mode.

- **Data:** The Data Bits setting for the IPS COM Port. (Default = 8 Bits.)

- **Parity:** The parity setting for the IPS COM Port. (Default = None.)

- **Stop:** The Stop Bits setting for the IPS COM Port. (Default = 1 Bit.)

- **Port Mode:** Sets up the serial COM / RS232 Port for use with either a local PC or an external modem. Note that when the Port Mode is set to "Modem" the modem initialization string will be sent every 15 minutes. (Default = Console.)

- **Modem Initialization String:** Defines a command string (up to 32 characters long) which can be sent out the serial COM Port to initialize an external modem. If the Port Mode is set to "Console", the modem initialization string will not be sent. For more information on initialization commands, please refer to the user's guide for your modem. (Default = **ATE0M0Q1&C1&D2S0=1**)

Notes:
- The Modem Initialization String cannot begin with a forward slash (**/**) or backslash (****) character.
- The Modem Initialization String cannot include non printable characters or quotation marks.
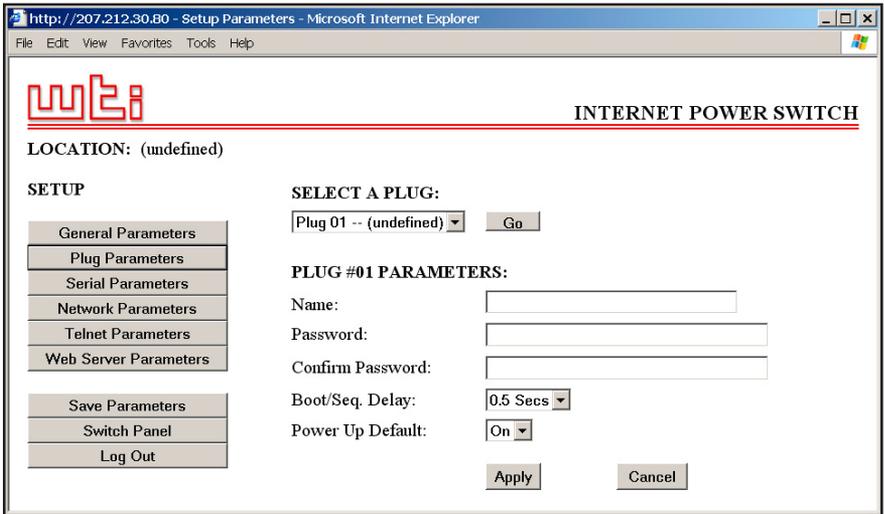
Figure 5.7: Plug Parameters Menu - Web Browser Interface

```
PLUG #1 PARAMETERS:

1. Plug Name:         (undefined)
2. Password:          (undefined)
3. Boot/Seq. Delay:   0.5 Secs
4. Power Up Default:  On


Enter Selection,
Press <ESC> to Exit ...
```
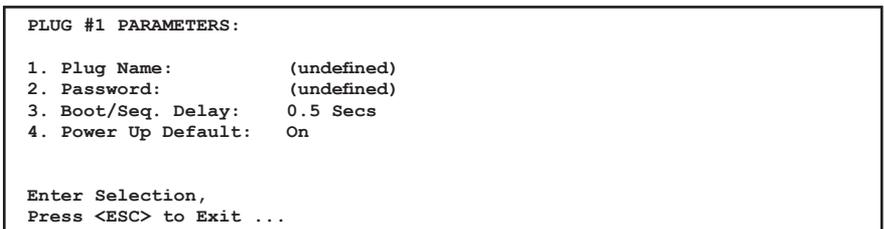
Figure 5.8: Plug Parameters Menu - Text Interface (Plug 1 Shown)

5.3.3. Plug Parameters Menus

The Plug Parameters Menus are used to define Plug Names, Plug Passwords, boot/sequence delay times and Power Up Default values for each of the IPS's Switched AC Outlets.

- **Web Browser Interface:** Click the "Setup" button to access the configuration menus, then click the "Plug Parameters" button. The Plug Parameters Menu will be displayed as shown in Figure 5.7.

- **Text Interface:** Type **/P n** and then press **[Enter]** (Where **n** is the number or name of the plug you wish to configure.) The Plug Parameters Menu will be displayed as shown in Figure 5.8.

Note that in this case, the major difference between the Web Browser Interface and Text Interface is that the Web Browser Interface allows you to select parameters for all plugs from a single menu, whereas the Text Interface includes a separate menu for each plug.

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The Plug Parameters Menu allows you to define the following parameters:

- **Plug Name:** (Up to 16 Characters, Default = undefined.)

  Note: Plug Names cannot begin with a number, dash (**-**), underscore character (**_**), forward slash character (**/**) or backslash (****) character, and cannot include non printable characters, spaces, asterisks (*****), colons (**:**), the plus symbol (**+**) or quotation marks.

- **Plug Password:** When this password is entered at login, the user will be able to issue commands to this plug, and any other plug that shares the same password as this plug as described in Section 5.3.3.1. (Four to 16 Characters, Default = undefined.)

  Note: Passwords cannot begin with the forward slash character (**/**) or backslash (****) character, and cannot include non printable characters, spaces, asterisks (*****) or quotation marks.

- **Boot/Seq. Delay:** When more than one plug is switched On/Off or a reboot cycle is initiated, the Boot/Sequence delay determines how much time will elapse between switching operations, as described in Section 5.3.3.2. (Default = 0.5 Second.)

- **Power Up Default:** Determines how this plug will react when the Default command (/D) is invoked, or after power to the unit has been interrupted and then restored. After the default command is invoked, or power is restored, the IPS will automatically switch each plug On or Off as specified by the Power-Up Default. (Default = On).

  Note: If you have accessed command mode using the System password, the Default command will apply to all switched plugs. If you have accessed command mode using a plug password, then the command will only be applied to plugs that share the same password entered at login.

5.3.3.1. Plug Passwords and Co-Location Features

The Plug Passwords allow you to determine which plugs an individual user will be permitted to control. When a plug password is entered at the login prompt, the user will be able to issue switching and reboot commands for the corresponding plug, and every other plug that shares this same password.

For example, if the password "switch" is defined for plugs 1, 2, and 3, then a user who logs into command mode using the password "switch" will only be allowed to issue commands to plugs 1, 2, and 3, but will not be allowed to issue commands to the remaining plugs. Note that Plug Passwords do not allow access to configuration menus, and users are only allowed to view the status of plugs permitted by their password.

5.3.3.2. The Boot / Sequence Delay Period.

The Boot / Sequence Delay value will be applied differently for Reboot operations as opposed to simple On/Off operations as described below:

1. **Reboot Cycles:**

    a) **Single Plug:** The Boot/Seq. Delay determines how long the plug will remain Off before it is switched back On again.

    b) **Several Plugs:** The Boot/Seq. Delay determines how long the plug will remain "Off", and also how long the IPS will pause before proceeding to the next plug.

2. **On/Off Switching:** The Boot/Seq. Delay determines how long the IPS will pause before proceeding to the next plug.

Examples: Assume that a user is only allowed access to plugs one through four, and that the Boot / Sequence Delays for each plug have been set as follows: Plug 1 = 1 Second, Plug 2 = 2 Seconds, Plug 3 = 5 Seconds, Plug 4 = 1 Minute.

If the user applies an "On" command to all four plugs, the IPS will respond as follows:

1. Turn On Plug 1, Wait 1 Second.
2. Turn On Plug 2, Wait 2 Seconds.
3. Turn On Plug 3, Wait 5 Seconds.
4. Turn On Plug 4.

If a "Reboot" Command is applied to Plug 3, the IPS will respond as follows:

1. Turn Off Plug 3, Wait 5 Seconds, Turn On Plug 3.

If a Reboot Command is applied to all four plugs, the IPS will respond as follows:

1. Turn Off all four plugs (short delay between plugs.)
2. Wait 1 Second, Turn On Plug 1, Wait 1 Second.
3. Wait 2 Seconds, Turn On Plug 2, Wait 2 Seconds.
4. Wait 5 Seconds, Turn On Plug 3, Wait 5 Seconds.
5. Wait 1 Minute, Turn on Plug 4.
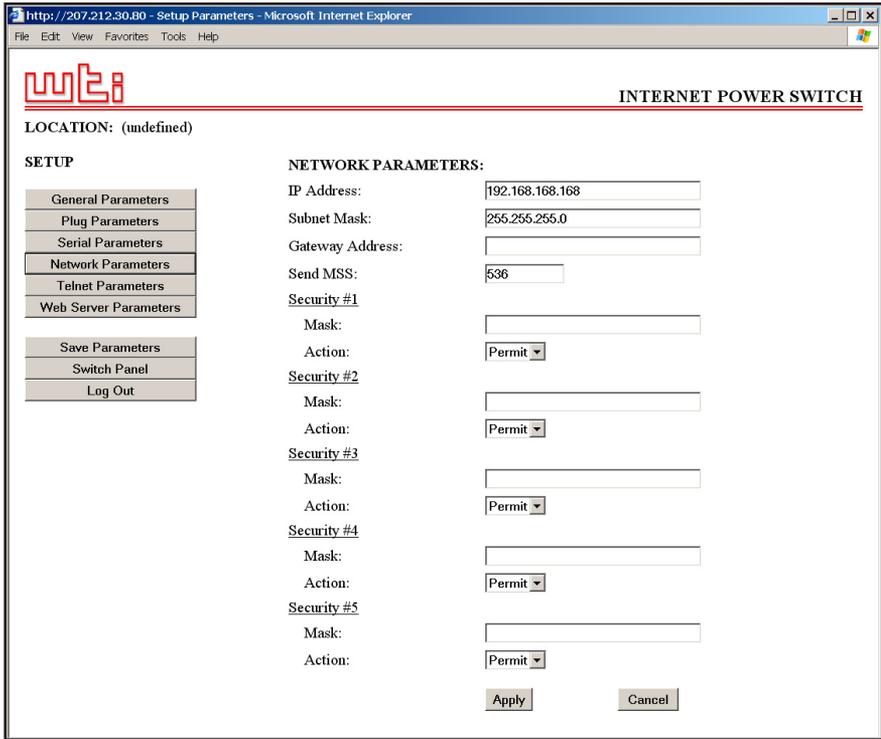
Figure 5.9: Network Parameters Menu - Web Browser Interface

```
NETWORK PARAMETERS:

1. IP Address:          192.168.168.168
2. Subnet Mask:         255.255.255.0
3. Gateway Address:     (undefined)
4. Send MSS:            536
5. IP Security


MAC Address:            00-09-9b-00-a0-32


Enter Selection,
Press <ESC> to Exit ...
```
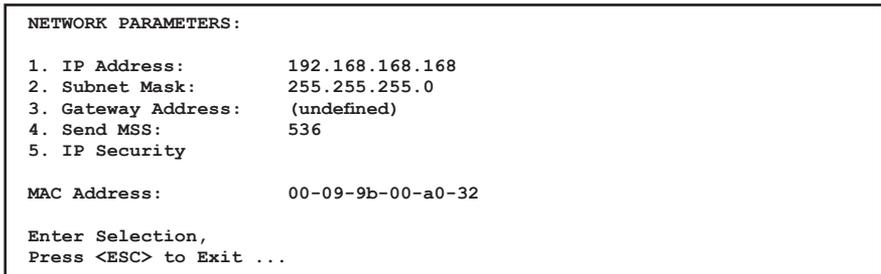
Figure 5.10: Network Parameters Menu - Text Interface

5.3.4. Network Parameters Menus

The Network Parameters Menus are used to select the IP Address and other network parameters.

- **Web Browser Interface:** Click the "Setup" button to access the Setup Menus, and then click the "Network Parameters" button. The Network Parameters Menu will be displayed as shown in Figure 5.9.

- **Text Interface:** Type **/N** and press **[Enter]**. The Network Parameters Menu will be displayed as shown in Figure 5.10.

Notes:

- Although the Web Browser Interface and Text Interface both allow configuration of the same network parameters, note that for the Text Interface, the IP Security feature is configured via a separate submenu. For more information on IP Security, please refer to Section 5.3.4.1.

- Settings for network parameters depend on the configuration of your individual network. Contact your network administrator for appropriate settings.

The Network Parameters Menus allow the following parameters to be defined. Except where noted, all parameters listed here are available via both the Web Browser Interface and Text Interface.

- **IP Address:** Defines the IP address for the IPS unit. (Default = 192.168.168.168.)

- **Subnet Mask:** Defines the Subnet Mask for the IPS unit. (Default = 255.255.255.0.)

- **Gateway Address:** Defines the Gateway Address for the IPS unit. (Default = undefined.)

- **Send MSS:** Defines the Maximum Segment Size that will be sent by the IPS. (Default = 536.)

- **IP Security:** Sets up the IP Security feature. Please refer to Section 5.3.4.1 for a detailed description of the IP Security feature.

- **MAC Address:** Displays the unit's MAC Address. Please note that this item only displays the assigned MAC Address, and cannot be used to redefine the address. Note also that the MAC Address is not displayed via the Web Browser Interface.

```
IP SECURITY:

1.  Security Mask #1:     (undefined)
2.  Mask #1 Action:       Permit
3.  Security Mask #2:     (undefined)
4.  Mask #2 Action:       Permit
5.  Security Mask #3:     (undefined)
6.  Mask #3 Action:       Permit
7.  Security Mask #4:     (undefined)
8.  Mask #4 Action:       Permit
9.  Security Mask #5:     (undefined)
10. Mask #5 Action:       Permit


Enter selection,
Press <ESC> to return to previous menu ...
```

Figure 5.11: IP Security Menu - Text Interface

5.3.4.1. IP Security Feature

The IP Security feature can be used to restrict unauthorized IP addresses from establishing a connection with the IPS. In the default state, the IPS accepts incoming IP connections from all hosts. To configure the IP Security feature, proceed as follows:

1. Access the IP Security Menu:

    a) **Web Browser Interface:** The IP Security feature is configured using the fields at the bottom of the Network Parameters Menu as shown in Figure 5.9.

    b) **Text Interface:** Go to the Network Parameters menu (**/N**), type **5** and press **[Enter]**. The IP Security menu will be displayed as shown in Figure 5.11.

2. The IP Security menu lists five IP Security "masks" along with the selected permit/deny action for each mask.

    a) Each Security Mask prompt defines a specific IP address or range of addresses. Each Mask Action prompt defines the permit/deny action for the corresponding mask.

    b) Masks are listed in order of ascending priority; Mask 1 has the lowest priority, Mask 5 has the highest priority.

    c) Masks have a cumulative effect; high priority masks supersede the effect of lower priority masks.

    d) Each IP Address consists of a series of four eight bit numbers. The number 255 is used as a wild card.

Example 1: Deny access to all hosts except 192.1.1.5:

    Security Mask #1: 255.255.255.255   Mask #1 Action: Deny
    Security Mask #2: 192.1.1.5   Mask #2 Action: Permit

Since 255 is a wild card, Mask #1 blocks all IP Addresses. Mask #2 then specifically grants access to 192.1.1.5 only.

Example 2: Allow access only by addresses that begin with 192.

    Security Mask #1: 255.255.255.255   Mask #1 Action: Deny
    Security Mask #2: 192.255.255.255   Mask #2 Action: Permit

Since 255 is a wild card, Mask 1 blocks all IP addresses. Mask 2 then grants access to all addresses that begin with 192.

Example 3: Allow access only by addresses that begin with 192, deny access to 192.1.1.5.

    Security Mask #1: 255.255.255.255   Mask #1 Action: Deny
    Security Mask #2: 192.255.255.255   Mask #2 Action: Permit
    Security Mask #3: 192.1.1.5   Mask #3 Action: Deny

Since 255 is a wild card, Mask 1 blocks all IP addresses. Mask 2 then grants access to all addresses that begin with 192. Finally, Mask 3 specifically blocks access by 192.1.1.5.

Note:

- Mask #5 has priority over the other four masks. If Mask #5 is set to deny access by "255.255.255.255" (all wild cards), you will not be able to access IPS Command Mode via network. Access will only be allowed via a Local PC or external modem connected to the IPS COM Port.

- When using the wild card address "255.255.255.255", make certain that at least one higher priority mask permits access by your IP address.
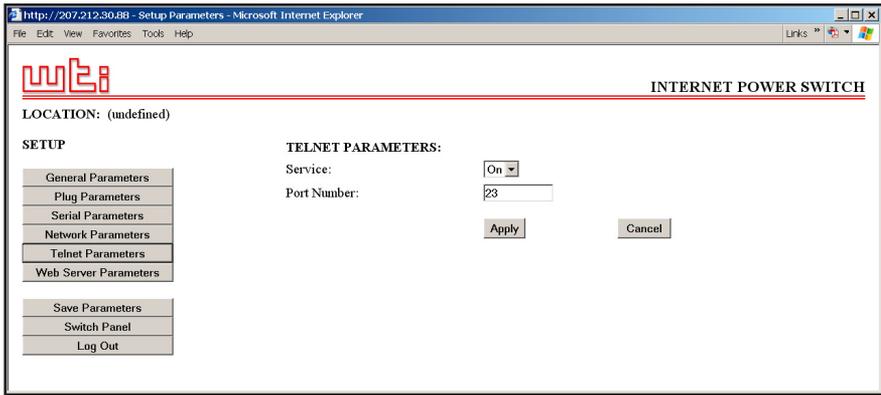
Figure 5.12: Telnet Parameters Menu - Web Browser Interface

```
TELNET PARAMETERS:

1. Service:       On
2. Telnet Port #:  23


Enter Selection,
Press <ESC> to Exit ...
```
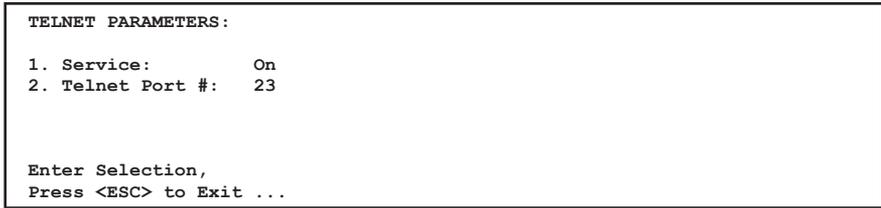
Figure 5.13: Telnet Parameters Menu - Text Interface

5.3.5.   The Telnet Parameters Menus

The Telnet Parameters Menus are used to enable/disable Telnet access to the IPS command mode and select the TCP port for Telnet connections.

- **Web Browser Interface:** Click the "Setup" button to access the configuration menus, and then click the "Telnet Parameters" button to display the menu shown in Figure 5.12.

- **Text Interface:** Type **/T** and press **[Enter]**. The Telnet Parameters Menu will be displayed as shown in Figure 5.13.

The Telnet Parameters Menus allow the following parameters to be defined. Please note that all parameters listed here are available via both the Web Browser Interface and Text Interface.

- **Service:** Enables/Disables Telnet communication with the IPS unit. When this item is "Off," user's will not be able to contact the unit via Telnet. (Default = On.)

- **Port Number:** Selects the TCP/IP port number that will be used for Telnet connections. (Default = 23.)
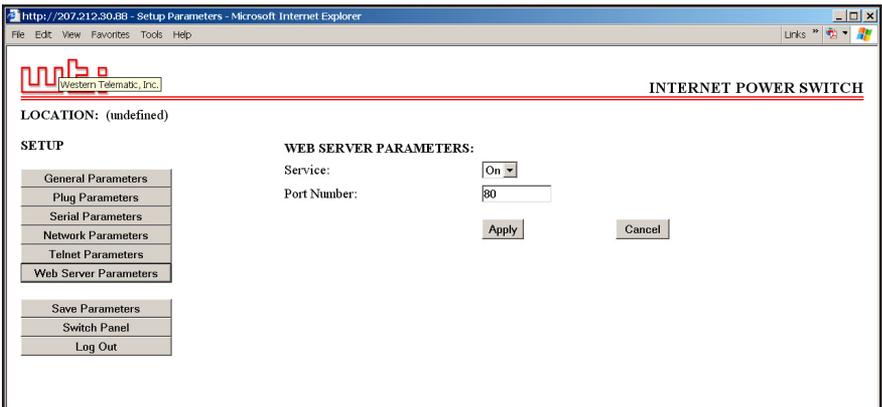
Figure 5.14: Web Server Parameters Menu - Web Browser Interface

```
WEB SERVER:

1. Service:       On
2. Server Port #:  80


Enter Selection,
Press <ESC> to Exit ...
```

Figure 5.15: Web Server Parameters Menu - Text Interface

5.3.6.   Web Server Parameters Menus

The Web Server Parameters Menus are used to configure the internal web server, which allows the unit to be operated via the Web Browser Interface.

- **Web Browser Interface:** Click the "Setup" button to access the configuration menus, and then click the Web Server Parameters button. The Web Server Parameters Menu will be displayed as shown in Figure 5.14.

- **Text Interface:** Type **/W** and press **[Enter]**. The Web Server Parameters Menu will be displayed as shown in Figure 5.15.

The Web Server Parameters Menu allows you to define the following:

- **Service:** Enables/Disables the IPS's Web Server. Note that when the Web Server is disabled, you will not be able to communicate via the Web Browser Interface. (Default = On.)

- **Port Number:** Sets the TCP/IP Port Number. The Port Number can be set to any valid number except 23; this is because 23 is the default port number that is used for communication with the unit via Telnet. (Default = 80.)

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5.4. Save Configuration Parameters

The IPS offers two methods for saving parameters; Saving to Memory, and Saving to an ASCII File.

Saving parameters to memory ensures that your user-defined configuration will remain intact if power to the IPS is temporarily interrupted. After the configuration menus have been used to change parameters, the IPS will prompt you to save parameters before exiting from command mode. At this point, the IPS offers the options to Save parameters, continue without saving, or revert to the previously saved parameters.

Saving Parameters to an ASCII file allows you to create a "backup" of your currently defined configuration. As described in Section 7, this provides quick recovery in the event that the unit is accidentally reset to default parameters, and also allows you to copy parameters to other IPS units when several units need to be configured with the same parameters.

Notes:
- After new Parameters have been applied, the IPS will display a "Save" prompt. In the Web Browser Interface, this prompt appears when you leave the configurations menus. In the Text Interface, the "Save" prompt appears when you disconnect from the unit. At this point, you have the option of saving new parameters to memory, continuing without saving, or reverting to previously saved parameters.
- If parameters have not been saved, and if power to the IPS is interrupted, newly defined parameters will be lost. When power is restored, the unit will then be configured with the previously saved parameters.

6.   Operation

As discussed in Section 5, the IPS offers two separate command interfaces; the Web Browser Interface and the Text Interface. Note that Both interfaces offer essentially the same command options and features, and that parameters defined via the Web Interface will also apply when communicating via the Text Interface (and vice versa.)

6.1. Operation via the Web Browser Interface

When using the Web Browser Interface, all switching commands are invoked via the Plug Status Screen, which also displays the status of the IPS's switched outlets.

6.1.1.   The Plug Status Screen - Web Browser Interface

When you login to the IPS command mode using the Web Browser Interface, the first screen that is displayed is the Plug Status Screen (or "Switch Panel".) The Plug Status Screen (Figure 6.1) lists the current On/Off status of the IPS's Switched Outlets and provides a series of "radio buttons" which are used to control On/Off/Boot switching of the outlets.

To invoke On/Off/Boot commands or view plug status via the Web Browser Interface, proceed as follows:

1.   Access the IPS Command Mode as described in Section 5.2.1.

2.   When the Plug Status Screen (Figure 6.1) appears, note that the screen includes a status field and switching and reboot controls for each of the IPS's Switched AC Outlets.

Notes:
• When switching and reboot operations are initiated, Boot/Sequence Delay times will be applied as described in Section 5.3.3.2.

• Users who login to command mode using a Plug password, will only be allowed to issue commands to the plugs allowed by that password.
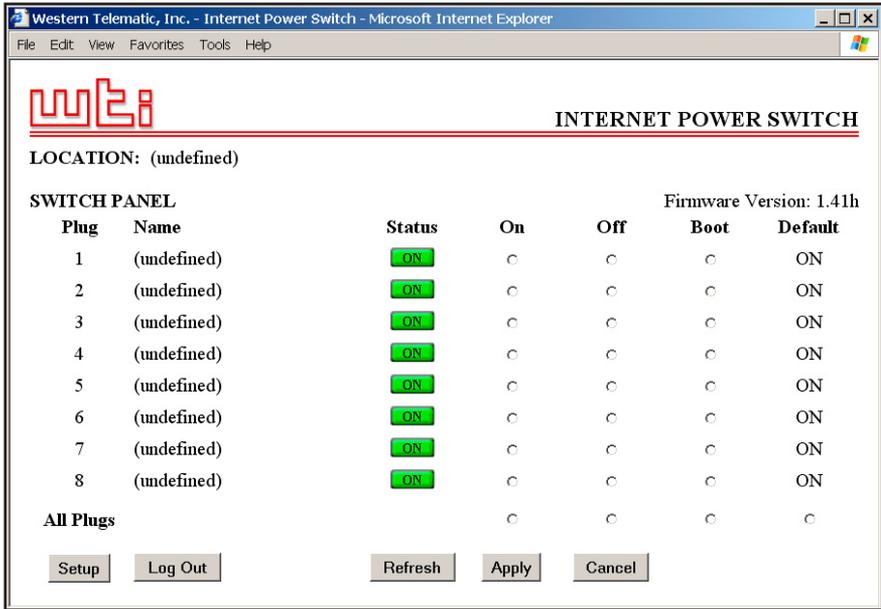
Figure 6.1: Plug Status Menu - Web Browser Interface (IPS-800-D20 Shown)

3. **Switching Plugs On:** Click the "On" radio button next to the desired plug(s), then click "Apply". To switch all Plugs On, click the "On" radio button in the "All Plugs" row, then Click "Apply."

4. **Switching Plugs Off:** Click the "Off" radio button next to the desired plug(s), and then click "Apply". To switch all Plugs Off, click the "Off" radio button in the "All Plugs" row, and then Click "Apply."

5. **Reboot Cycle:** Click the "Boot" radio button next to the desired plug(s), and then click "Apply". To reboot all Plugs, click the "Boot" button in the "All Plugs" row, and then Click "Apply."

6. **Set Plugs to Power Up Defaults:** To set plugs to their user-defined Power-Up Default On/Off status, click the "Default" button in the "All Circuits" row and then click "Apply." Note that in order for this command to function, Power Up Default values for each plug must first be defined as described in Section 5.3.3.

When each switching, default or reboot command is invoked, the IPS will display a screen which indicates that a switching operation is in progress, then return to the Plug Status screen when the command is complete. At that time, the Status Screen will list the updated On/Off status of each plug.

```
 Internet Power Switch v1.41h    Site ID: (undefined)

Plug | Name            | Password    | Status | Boot/Seq. Delay | Default |
-----+-----------------+-------------+--------+-----------------+---------+
  1  | (undefined)     | (undefined) |   ON   |    0.5 Secs     |   ON    |
  2  | (undefined)     | (undefined) |   ON   |    0.5 Secs     |   ON    |
  3  | (undefined)     | (undefined) |   ON   |    0.5 Secs     |   ON    |
  4  | (undefined)     | (undefined) |   ON   |    0.5 Secs     |   ON    |
  5  | (undefined)     | (undefined) |   ON   |    0.5 Secs     |   ON    |
  6  | (undefined)     | (undefined) |   ON   |    0.5 Secs     |   ON    |
  7  | (undefined)     | (undefined) |   ON   |    0.5 Secs     |   ON    |
  8  | (undefined)     | (undefined) |   ON   |    0.5 Secs     |   ON    |
-----+-----------------+-------------+--------+-----------------+---------+



 "/H" for help.
 IPS>
```

Figure 6.2: Plug Status Screen - Text Interface (IPS-800-D20 Shown)

6.2. Operation via the Text Interface

When using the Text Interface, all switching functions are performed by invoking simple, ASCII commands. ASCII commands are also used to display status screens and to log out of command mode. The Text Interface includes a Help Menu, which summarizes all available IPS commands. To display the Text Interface Help Menu (Figure 6.3), type **/H** and press **[Enter]**.

6.2.1.   The Plug Status Screen - Text Interface

When you login to the IPS command mode using the Text Interface, the first screen displayed after login is the Plug Status Screen. The Plug Status Screen (Figure 6.2) lists the current status of the IPS's Switched AC Outlets and displays the firmware version and currently defined Site I.D. Message.

Normally, the Plug Status Screen will also be redisplayed each time a command is successfully executed. Note however, that if desired, the Automated Mode (See Section 6.4) can be enabled to suppress the display of the Plug Status Screen after each command.

```
 Internet Power Switch v1.41h    Site ID: (undefined)

 Display                             Configuration
 /H          Display Help Screen     /G          View/Set General Parameters
 /S          Display Plug Status     /P [n]      View/Set Plug Parameters
 /SN         Display Network Status  /C          View/Set Serial Parameters
                                     /N          View/Set Network Parameters
 Control                             /T          View/set Telnet Parameters
 /D          Set Plugs to Default    /W          View/Set Web Server
 /Boot <n>   Boot Plug n             /E          Save Parameters
 /On <n>     Turn On Plug n          /R          Recall Parameters
 /Off <n>    Turn Off Plug n         /DL         Download Parameters to File
 /X          Exit/Disconnect
                                     Utilities
 +---------------------------------+ /I          Reset Network Interface
 | [n] = optional plug name or number | /U       Upgrade Firmware
 | <n> = required plug name or number |
 | n+n or n n = plug n and plug n    |
 | n:n = plug n through plug n        |
 | *   = all plugs                    |
 | ,y  = bypass "Sure? (y/n)"         |
 +---------------------------------+

 IPS>
```

Figure 6.3: The IPS Help Screen - Text Interface

6.2.2.   Switching and Reboot Commands - Text Interface

These commands can be used to switch or reboot the IPS's switched plugs, and can also be used to set plugs to the user-defined Power-Up Default values. Plugs may be specified by name or number.

Notes:

- Wait for the "IPS>" prompt to appear before entering commands. The prompt will not reappear until the previous command is complete.

- Commands are not case sensitive. All commands are invoked by pressing **[Enter]**.

- Users who login to command mode using a Plug password, will only be allowed to issue commands to the plugs allowed by that password.

- If command confirmation is enabled, the IPS will display the Status Screen after commands are successfully completed.

- When switching and reboot operations are initiated, Boot/Sequence Delay times will be applied as described in Section 5.3.3.2.

To Switch Plugs, or initiate a Boot Cycle, proceed as follows:

1. **Switch Plug(s) On:** To power-on a plug, type **/ON n** and press [Enter]. Where "**n**" is the number or name of the desired plug. For example:

    /ON 1 or **/ON ROUTER**

2. **Switch Plug(s) Off:** To power-off a plug, type **/OFF n** and press **[Enter]**. Where "**n**" is the number or name of the desired plug. Note that the "**/OFF**" command can also be entered as "**/OF**". For example:

    /OFF 2 or **/OF ROUTER**

3. **Boot Plug(s):** To initiate a Boot cycle, type **/BOOT n** and press **[Enter]**. Where "**n**" is a the number or name of the desired plug. Note that the "**/BOOT**" command can also be entered as "**/BO**". For example:

    /BOOT 1 or **/BO ATMSWTCH**

4. **Set Plugs to Power Up Defaults:** Type **/D** and press **[Enter]**. Plugs will be set to their default On/Off status, which is defined using the Plug Parameters Menu as described in Section 5.3.3.

    ### Notes:

    *   When you have accessed command mode using the System Password, the Default command will be applied to all plugs.

    *   When you have accessed command mode using a Plug (User) Password, the Default command will only be applied to the plugs permitted by the password.

5. **Suppress Command Confirmation Prompt:** To execute a Boot/On/Off command without displaying the "Sure?" prompt, include the "**,Y**" option at the end of the command line. For example:

    /ON ROUTER,Y or **/BOOT 2,Y**

6.2.3. Applying Commands to Several Plugs - Text Interface

As described below, switching and reboot commands can be applied to only one Switched AC Outlet, or to an assortment of outlets.

> **Note:** When switching and reboot operations are initiated, Boot/ Sequence Delay times will be applied as described in Section 5.3.3.2.

1. **Several Plugs:** To apply a command to several plugs, enter the numbers or names for the plugs, separated by a "plus sign" (**+**). For example to switch plugs 1, 3, and 4 Off, enter the following:

   /OFF 1+3+4 [Enter]

2. **Series of Plugs:** To apply a command to a series of plugs, enter the number for the plugs that mark the beginning and end of the series, separated by a colon. For example, to switch plugs 1 through 3 On, enter the following:

   /ON 1:3 [Enter]

4. **All Plugs:** To apply a command to all plugs, enter an asterisk in place of the name or number. For example, to Boot all plugs, enter the following:

   /BO * [Enter]

6.3. Logging Out of Command Mode

When you have finished communicating with the IPS, it is important to always disconnect using either the "Log Out" button (Web Browser Interface) or /X command (Text Interface), rather than simply closing your browser window or communications program.

When you disconnect using the Log Out button or /X command, this ensures that the IPS has completely exited from command mode, and is not waiting for the inactivity timeout period to elapse before allowing additional connections.

6.4. The Automated Mode

The Automated Mode allows the IPS to execute switching and reboot commands, without displaying menus or generating response messages. Automated Mode is designed to allow the IPS to be controlled by a device which can generate commands to control power switching functions without human intervention.

When Automated Mode is enabled, the /ON, /OFF, /BOOT, /D and /X commands are executed without a "Sure?" confirmation prompt and without command response messages; the only reply to these commands is the "IPS>" prompt, which is displayed when the command is complete.

Note that although Automated Mode can be enabled using either the Web Browser Interface or Text Interface, Automated Mode is designed primarily for users who wish to send ASCII commands to the IPS without operator intervention, and therefore does not specifically apply to the Web Browser Interface. When Automated Mode is enabled, the Web Browser Interface can still be used to invoke On / Off / Boot commands.

Notes:

- When Automated Mode is enabled, all IPS password security functions are disabled, and users are able to access System Level command functions (including the configuration menus) and control plugs without entering a password.

- If you need to enable the Automated Mode, but want to restrict network access to IPS configuration menus, it is recommended to enable and configure the IP Security Function as described in Section 5.3.4.1.

To enable/disable Automated Mode, access the General Parameters menu (see Section 5.3.1,) then set the "Automated Mode" option to "On". When Automated Mode is enabled, IPS functions will change as follows:

1. **All Password Security Suppressed:** When a user attempts to access command mode, the password prompt will not be displayed at either the COM / RS232 Port or the Network Port. Unless specifically restricted by the IP Security Function, all users will be allowed to access both switching and configuration functions, and all commands will be immediately accepted without the requirement to enter a password.

2. **Status Screen Suppressed:** The status screens will not be automatically displayed after commands are successfully executed. Note however, that the /S command can still be invoked to display the status screen as needed.

3. **"Sure?" Prompt Suppressed:** All commands are executed without prompting for user confirmation.

4. **Error Messages Suppressed:** If the **[Enter]** key is pressed without entering a command, the IPS will not respond with the "Invalid Command" message. Note however, that an error message will still be generated if commands are invoked using invalid formats or arguments.

All other status display and configuration commands will still function as normal.

6.5. Manual Operation

In addition to the command driven functions available via the Web Browser Interface and Text Interface, the IPS's switched plugs can also be toggled On and Off manually. To manually toggle all plugs On or Off, press the Default Button, and hold it down for approximately three seconds.

If desired, the Default Button's manual plug control ability can also be disabled via the General Parameters menu as described in Section 5.3.1.

7. Saving and Restoring Configuration Parameters

After the IPS has been properly configured, parameters can be downloaded and saved as an ASCII text file on your local or remote PC. Later, if the configuration is accidentally altered, the file with the saved parameters can be uploaded to automatically reconfigure the unit without the need to manually assign each parameter.

Saved parameters can also be uploaded to other IPS units. This allows rapid set-up when several units will be configured with the same parameters.

The "Save Parameters" procedure can be performed from any terminal emulation program (e.g. ProComm, Crosstalk, Hyperterminal, etc.), which allows downloading of ASCII files.

> **Note:** Although this function is only available via the Text Interface, parameters that are defined via the Web Browser Interface will also be sent to the ASCII file.

7.1. Sending Parameters to a File

1. Start your communications program and access the IPS command mode using the System Level Password.

2. When the IPS command prompt appears, type **/DL** and press **[Enter]**. The IPS will prompt you to prepare your communications program. Set up your communications program to receive an ASCII download, and specify a name for the file that will receive the saved parameters (e.g. IPS.PAR).

3. When the communications program is ready to receive the file, return to the IPS command mode, and press **[Enter]** to proceed.

4. The IPS will send a series of ASCII command lines which specify the currently selected IPS parameters.

7.2. Restoring Saved Parameters

This Section describes the procedure for using your communications program to send saved parameters to the IPS.

> **Note:** Parameters saved to an ASCII file can only be restored via the Text Interface. This procedure cannot be performed via the Web Browser Interface.

1. Start your communications program and access the IPS command mode via the Text Interface as described in Section 5.2.2.

2. If the Password Prompt is displayed, key in your System Level Password and press **[Enter]**.

3. Configure your communications program to upload an ASCII text file.

4. Upload the file with the saved parameters. If necessary, key in the file name and directory path.

5. When the upload is complete, make certain to terminate the communications program's upload mode.

Note:

- The current On/Off status of each IPS plug will not be saved or restored.

- When the configuration file is sent to the IPS via telnet, the unit's IP Address, Subnet Mask, and Gateway Address will not be changed until after you exit from command mode.

At this point, saved parameters should have been restored to the IPS unit. Check the Plug Status Screen, General Parameters Menu, Plug Parameters Menu and Network Parameters Menu to make certain that saved parameters have been accurately restored.

8. Upgrading the IPS Firmware

When new, improved versions of the IPS firmware become available, the "Upgrade Firmware" function can be used to update the unit. Updates can be installed via the Console Port or Network Port.

Notes:

- The upgrade procedure can only be performed via the Text Interface.
- All other network ports will be disabled during the firmware upgrade procedure.
- When the upgrade procedure is complete, all parameters will be set to their default states. Therefore, it is recommended to save IPS configuration parameters to an ASCII file (as described in Section 7) before beginning this upgrade procedure.

1. Obtain the update file. Firmware modifications can either be mailed to the customer on a CDR, or downloaded from WTI. Place the upgrade CDR in your disk drive or copy the file to your hard drive.

2. Access the IPS command mode via the Text Interface. When the password prompt is displayed, key in the System Level Password.

3. When the command prompt appears, type **/Ʊ** and press **[Enter]**. The IPS will display a screen which offers the following options:

   - 1. Upgrade Sector 0
   - 2. Upgrade Sectors 1 - 4
   - 3. Upgrade Sectors 5 - 7
   - 4. Abort Upgrade

   Note: Instructions regarding the proper Sector option will be supplied when upgrades become available.

   Select the Sector Option indicated for the upgrade and press **[Enter]**, or type **4 [Enter]** to abort the upgrade procedure.

4. Set your communication program for ASCII Mode, then use the program's "Send File" function to transfer the upgrade file to the IPS. Select ASCII format, then specify the filename and directory location where the firmware upgrade file resides.

5. If the upload is successful, the IPS will load the upgrade firmware into memory, and then reboot itself.

    Note: If you are performing the upgrade procedure via the Network Port, the IPS will break the network connection when the system is reinitialized. However, the IPS will retain the current settings for the IP Address, the Telnet Port Number, Web Server Port Number and Console Port Mode and Baud Rate.

6. **Incomplete Upload:** If the upload is interrupted, times-out, or if the update file becomes corrupted during transfer, the IPS will display a screen which asks for confirmation before proceeding. To proceed, type **1** and press **[Enter]**, then return to Step 4 above to retry the upload, or press **[Esc]** to reboot the IPS unit.

7. **Recovery Mode:** In the rare event that the IPS operating system becomes corrupted during installation, front panel indicators will blink, and the unit will automatically switch to Recovery Mode. If the unit switches to Recovery Mode, first access the IPS command mode to reset the Console Port to 9600 bps, Eight Data Bits, No Parity, One Stop Bit, and then return to step 3 above and repeat the upload procedure.

When firmware upgrades are available, WTI will provide the necessary files via download or mailed CDROM. At that time, an updated Users Guide or addendum will also be available.

A.   Interface Description

A.1. Serial COM / RS232 Port Interface
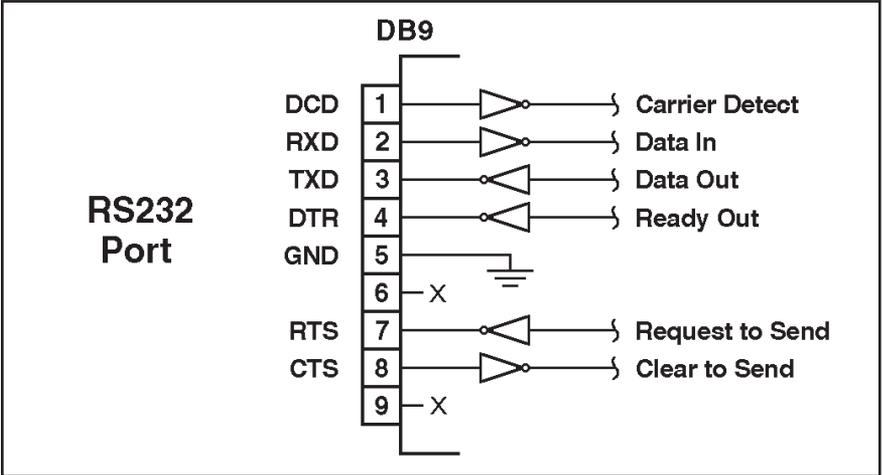
Figure A.1: COM Port Interface

B. Specifications

Power Input / Output:
Models IPS-800-D20 & IPS-1600-D20 (120 VAC)
- **AC Input:** Two Separate Circuits; 20 Amps Max. per Circuit
    - **Voltage:** 100 - 120 VAC 50/60 Hz
    - **Connectors:** Two (2) IEC320-C20 Inlets
- **AC Outputs:**
    - **Connectors:** NEMA 5-15R Outlets. (IPS-800-D20 has Eight Outlets, IPS-1600-D20 has 16 Outlets.)
    - **Load:** 15 Amps per Outlet. 20 Amps per Circuit; providing a Total of 40 Amps for both circuits.

Models IPS-800E-D20 & IPS-1600E-D20 (230 VAC)
- **AC Input:** Two Separate Circuits; 20 Amps Max. per Circuit
    - **Voltage:** 100 - 240 VAC 50/60 Hz
    - **Connectors:** Two (2) IEC320-C20 Inlets
- **AC Outputs:**
    - **Connectors:** IEC320-C13 Outlets. (IPS-800E-D20 has Eight Outlets, IPS-1600E-D20 has 16 Outlets.)
    - **Load:** 15 Amps per Outlet. 20 Amps per Circuit; providing a Total of 40 Amps for both circuits.

Control Ports:
- **Ethernet Port:** 10Base-T
- **COM Port:** DB9M, RS232C, DTE
- **RS232 Coding:** Serial ASCII, 7/8 Bits

Physical / Environmental:
- **Size: Models IPS-800-D20 & IPS-800E-D20**
    - **Width:** 17.5" (44.5 cm) Standard Rack
    - **Depth:** 7.0" (17.8 cm)
    - **Height:** 1.75" (4.5 cm) 1 Rack U
- **Size: Models IPS-1600-D20 & IPS-1600E-D20**
    - **Width:** 17.5" (44.5 cm) Standard Rack
    - **Depth:** 7.0" (17.8 cm)
    - **Height:** 3.5" (8.9 cm) 2 Rack U
- **Shipping Weight:**
    - **Models IPS-800-D20 & IPS-800E-D20:** 10 lbs (4.5 Kg)
    - **Models IPS-1600-D20 & IPS-1600E-D20:** 12 lbs (5.5 Kg)
- **Operating Temperature:** 32°F to 122°F (0°C to 50°C)
- **Humidity:** 10 - 90% RH

C. Customer Service

Customer Service hours are from 8:00 AM to 5:00 PM, PST/PDT, Monday through Friday. When calling, please be prepared to give the name and model of the unit, its serial number and a description of its symptoms. If the unit should need to be returned for factory repair it must be accompanied by a Return Authorization number from Customer Service.

<div align="center">

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5 Sterling
Irvine, California 92618

Toll Free Service Line: 1-888-280-7227
Local Phone: (949) 586-9950
Service Fax: (949) 457-8138

Email: service@wti.com

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